

Comparing Mean, Median, and Mode

Purpose

Students will compare the mean, median, and mode for a set of data and explain which measure is most appropriate in a given context.

Materials

For the teacher: chalkboard, chalk

For each student: small sticky note

For each pair of students: copy of Black Line Master (BLM) *Which Measure Is Needed?*, pencils

Activity

A. Pre-Activity Preparation

On the chalkboard, construct a blank bar graph for students to complete labeled “Number of Books Read This Month.” Label the bottom of the graph from 0 to 10.

B. Introduction

1. Have students complete the graph on the chalkboard by placing a small sticky note over the appropriate number as they enter the classroom for the day.
2. Review with students the meanings of *mean* (the sum of the values divided by the number of values), *median* (half of the data falls before this number and half falls after it), and *mode* (the value that appears most often).
3. Using the graph the students completed at the beginning of the day, find the mean, median, and mode of the number of books read this month.

C. Partner Activity

1. Tell students the following story:
Five students took a math test. The highest possible score was 100. The average (mean) for the class was 88. The mode of the group was 80. The median was 86. What are the possible scores of the five students?
2. Have students work in pairs to figure what the possible scores would be. [Possible scores: 80, 80, 86, 94 and 100; 80, 80, 86, 95, and 99; 80, 80, 86, 96, and 98].

(continued)

EXTENDING
THE



ACTIVITY

Have students work in groups of three or four to write scenarios similar to the ones on the BLM and share them with the rest of the class.

connecting
across the
curriculum



Social Studies

Have students use the almanac to figure the percent of immigrants for a recent year in 10 of the largest states. Ask students to figure mean, median, and mode using this data.

**Standards Link
6.6.2**

Activity (continued)

D. Teacher-Led Activity

1. Give examples of scenarios in which the mean, median, or mode would be the best choice as a measurement.
2. Explain that the mean is computed anytime you want a true average of the data, such as average monthly temperature.
3. Say: “The mode is computed when you need to know which result occurred the greatest number of times. Let’s say we wanted to find out which of three soft drinks is the favorite of the class. We number the soft drinks 1, 2, and 3 and do a taste test. We plot the data on one, two, or three, based on each student’s choice. The mode of this data would tell us which result was chosen most often.”
4. Instruct the students that the median is computed whenever you need to know the exact center of the data set. Tell them that home prices in an area are normally reported as the median price. Explain that the median home price tells us that exactly half of the home prices fall above that price and half fall below it.
5. Hand out one copy of the BLM *Which Measure Is Needed?* to each pair of students and have them respond to each scenario.


E. Follow-Up


Lead a class discussion about the conclusions made on the BLM.


Classroom Assessment

Basic Concepts and Processes

During the activity and when reviewing the BLM, discuss the following questions with your students to gauge their understanding of the Standard Indicator:

 Explain the difference between median and mean.

 What is the median of the set $\{3, 4, 5, 6, 10\}$?

 What is the mean of the set $\{3, 4, 5, 6, 10\}$?

Which Measure Is Needed?

Directions: Work with your partner to discuss and respond to the questions following each scenario.

Scenario 1

Mr. Hoof, a shoe store owner, sent a questionnaire to men in his town. He found the following information about the men's shoe sizes:

Mean: $8\frac{1}{2}$ Median: 7 Mode: $9\frac{1}{2}$ Range: 7 - 12

Which of these measures will be most helpful for Mr. Hoof to decide the number of pairs for each size he should order? Explain your answer thoroughly.

Scenario 2

Miss Doowright, a sixth-grade teacher, looked at Tom's spelling scores for a nine-week period. She found the following:

Mean: 87 Median: 83 Mode: 85

Which of these measures will be most helpful to Miss Doowright in deciding what Tom's grade should be for the grading period? Explain your answer thoroughly.

Scenario 3

Mr. Brown, a meteorologist, studied the January temperature patterns of Centerville over the past five years. He found the following:

Mean: 25°F Median: 35°F Mode: 48°F

Which of these measures would Mr. Brown report to the Weather Bureau as the average temperature for the month of January? Explain your answer thoroughly.

Which Measure Is Needed?

Teacher Directions

Distribute a copy of the BLM *Which Measure Is Needed?* to each pair of students. Have students work in pairs to discuss the scenarios and write their response to the questions.

Answer Key

Expected responses:

Scenario 1: Students should realize that the mode would be most important to Mr. Hoof since that is the shoe size that appeared most often.

Scenario 2: Students should realize that the mean would be most important in figuring Tom's grade since it tells the average rather than the middle score or the one that appeared most often.

Scenario 3: Students should realize that the mean would be reported as the average January temperature.